IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Nayak et al	)	
Applicant's Ref: 6568/54031US2	)	Examiner: W. A. Klimowicz
Serial No.: 10/765,184	)	Group Art Unit: 2627
Filed: January 28, 2004	)	
	)	Date: September 21, 2006
Title: **HEAD ACTUATOR ASSEMBLY FOR A TAPE DRIVE**	)	Confirmation No.: 9838

AMENDMENT AND RESPONSE TO OFFICE ACTION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated June 23, 2006, please enter the following amendments and consider the following remarks.

Amendments to the claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/arguments begin on page 7 of this paper.

CLAIMS

Please amend the claims as follows and cancel claims 3 and 13 without prejudice.

1. (Currently amended) [[An]]A head actuator assembly for a tape drive, comprising:

a coarse positioner base assembly;and

a coarse positioner base configured to carry a head carriage assembly and voice coil holder, the coarse positioner base having at least first and second bores and at least first and second bushings respectively in the first and second bores, the coarse positioner base being vertically slidably mounted on the first and second shafts such that the first and second shafts respectively extend through the first and second bushing and the first and second bores

~~a magnetic read/write head; and~~

~~means for positioning the head~~.

2. (Currently amended) A head actuator assembly for a tape drive, comprising:

a coarse positioner base assembly;

first and second shafts vertically mounted at first ends on the coarse positioner base assembly; [[and]]

a coarse positioner base configured to carry a head carriage assembly and voice coil holder, the coarse positioner base having at least first and second bores and at least first and second bushings respectively in the first and second bores, the coarse positioner base being vertically movably mounted on the first and second shafts such that the first and second shafts respectively extend through the first and second bushing and the first and second bores; and

third and fourth bushings respectively in the first and second bores, the first and second shafts respectively extending through the third and fourth bushings, the first, second, third and fourth bushings forming a four-point support of the coarse positioner base on the first and second shafts.

Claim 3 (Canceled)

4. (Currently amended) The head actuator assembly of claim [[3]]2, further comprising a biasing element coupled to bias the coarse positioner base against the second shaft.

5. (Currently amended) The head actuator assembly of claim 4, further comprising a head carriage assembly and a separate voice coil holder ~~removeably~~removably connected to the head carriage assembly by a fastener.

6. (Original) The head actuator assembly of claim 5, wherein the head carriage assembly is made of plastic and the voice coil holder is made of metal.

7. (Original) The head actuator assembly of claim 6, further comprising a voice coil motor having a tapered center pole and a cylindrical outer magnet, with a space between the tapered center pole and the cylindrical outer magnet accommodating the voice coil holder.

8. (Original) The head actuator assembly of claim 7, further comprising a flexible printed circuit (FPC) bracket and a voice coil motor holder attached to the voice coil holder and holding the voice coil motor, the FPC bracket coupled to the voice coil motor

holder and containing slots through which an FPC is routed and retained, the FPC bracket moving vertically with the voice coil motor as the coarse positioner base is vertically moved and carrying the FPC without interference.

9. (Original) The head actuator assembly of claim 8, further comprising a shaft support arrangement for supporting the second shaft, the shaft support arrangement comprising: first and second support shafts vertically mounted at a first end on the coarse positioner base assembly parallel to the second shaft; and a horizontal connecting plate mounted at a second end of the first and second support shafts and the second shaft.

10. (Original) The head actuator assembly of claim 9, wherein the first shaft is a guide shaft and the second shaft is an anti-rotation shaft.

11. (Currently amended) A head actuator assembly for a tape drive, comprising:

a head carriage assembly; [[and]]

a voice coil holder ~~removeably~~removably coupled to the head carriage assembly;

a coarse positioner base assembly;

two shafts mounted on the coarse positioner base assembly; and

a coarse positioner base slidably mounted on the two shafts with a force bias applied on the coarse positioner base against one of the two shafts.

12. (Original) The head actuator of claim 11, wherein the head carriage assembly comprises a plastic head carriage, and the voice coil holder is metallic.

Claim 13 (Canceled)

14. (Currently amended) [[The]]A head actuator assembly ~~of claim 13,~~ of a tape drive, comprising:

a head carriage assembly;

a voice coil holder removably coupled to the head carriage assembly;

a coarse positioner base assembly;

two shafts mounted on the coarse positioner base assembly; and

a coarse positioner base slidably mounted on the two shafts with a force bias applied on the coarse positioner base against one of the two shafts; and

wherein the coarse positioner base is supported on the two shafts by a four-point support.

15. (Currently amended) The head actuator assembly of claim [14]11, further comprising a voice coil motor holder and a voice coil motor held by the voice coil motor holder, the voice coil motor holder ~~removeably~~removably mounted on the head carriage assembly.

16. (Original) The head actuator assembly of claim 15, wherein the voice coil motor has a tapered pole and a cylindrical outer magnet, with a space between the tapered center pole and the cylindrical outer magnet accommodating the voice coil holder.

17. (Original) The head actuator assembly of claim 16, wherein the voice coil motor holder has top and bottom flexure mounting surfaces, and further comprising top and bottom flexures mounted to the voice coil motor holder and the voice coil holder.

18. (Original) The head actuator assembly of claim 17, further comprising a flexible printed circuit (FPC) bracket coupled to the voice coil motor holder and having slots for folding flexible printed circuits.

19. (Original) The head actuator assembly of claim 18, wherein the FPC bracket includes locating features at one end of the slots and extending perpendicular to the slots to retain flexible printed circuits within the slots.

20. (Original) The head actuator assembly of claim 19, further comprising removable fasteners connecting the voice coil holder and the head carriage assembly.

REMARKS

Applicant thanks the Examiner for the careful review of this application. Claims 1-2, 4-5, 11 and 15 were amended. No new matter was added. Claims 3 and 13 were canceled without prejudice. Therefore, claims 1-2, 4-12 and 14-20 remain pending in this application.

CLAIM REJECTIONS UNDER 35 U.S.C. § 112

Claim 1 appears to have been rejected under 35 U.S.C. § 112, second and/or sixth paragraph. In light of the amendment to claim 1 which eliminated the means-plus-function language, the apparent rejections have been obviated.

Claim 15 was rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, claim 15 recited that "a voice coil motor holder and a voice coil motor holder held by the voice coil motor." Applicant has amended claim 15 to recite that --a voice coil motor holder and a voice coil motor held by the voice coil motor holder- -. Withdrawal of the rejection of claim 15 is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 102(b)

Claims 1 and 11 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Nayak (U.S Patent No. 5,371,636). Applicant respectfully traverses for the following reasons.

Claim 1 has been amended such that it is now equivalent to the as-filed claim 2. Similarly, claim 11 has been amended to incorporate the limitations of as-filed claim 13. Therefore the 35 U.S.C. § 102(b) rejections have been obviated.

REJECTIONS UNDER 35 U.S.C. § 103(a)

Claims 2 and 12-13 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nayak. Applicant respectfully traverses. The allowable subject matter of claim 3 was folded into claim 2. Due to this, the rejection of claim 2 is now moot. As previously mentioned, claim 1 has been amended such that claim 1 is now equivalent to the as-filed claim 2. Applicant therefore refers the Examiner to the amended claim 1. Applicant has additionally folded the subject matter of claim 13 into independent claim 11 and will therefore discuss the 103 rejection in view of claim 11 and also in view of claim 1.

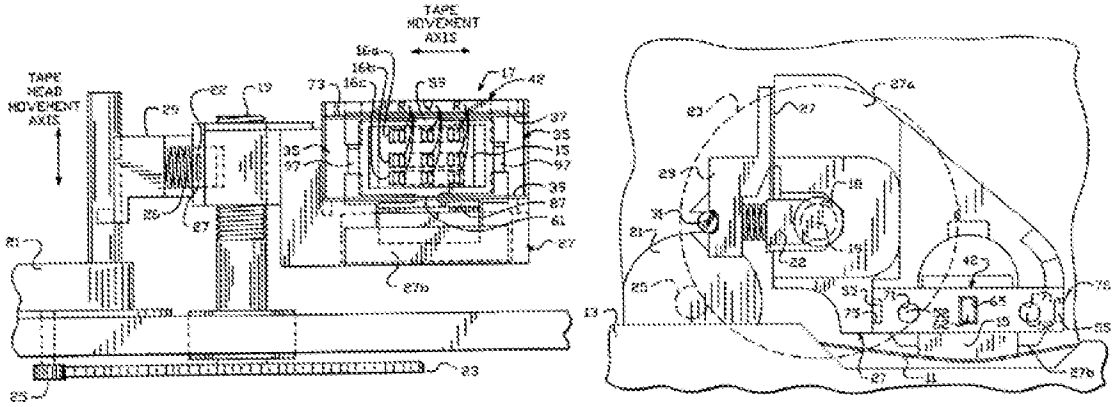
The M.P.E.P. sets forth the strict legal standard for establishing a *prima facie* case of obviousness based on modification or combination of prior art references. "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references where combined) must teach or suggest all the claim limitations." M.P.E.P. § 2142, 2143. The teaching, suggestion, or motivation for the modification or combination and the reasonable expectation of success must both be found in the prior art and cannot be based on an applicant's disclosure. *See Id.* (citations omitted). "Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art" at the time of the invention. M.P.E.P. § 2143.01. Even the fact that references can be modified or combined does not render the resultant modification or combination obvious unless the prior art teaches or suggests the desirability of the modification or combination. *See Id.* (citations omitted). Moreover, "To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. All

words in a claim must be considered in judging the patentability of that claim against the prior art." M.P.E.P. § 2143.03 (citations omitted).

Nayak apparently discloses an apparatus for fine positioning a tape head relative to a head carriage that is coarsely positionable by a rotating lead screw. The fine positioning apparatus includes parallel first and second resilient support beams oriented generally parallel to the direction of tape travel and having their ends fixedly secured to the head carriage so as to be deflectable in a direction transverse to the direction of tape travel. The centers of the parallel first and second support beams have their centers secured to a tape head frame which contains the tape. A linear motor drives the tape head frame against the resilience of the first and second resilient support beams in response to a drive signal which, for example, is derived from tracking error information produced pursuant to reading of servo information on tape. Pursuant to the displacement of the tape head frame against the resilience of the support beams, the magnetic tape head is moved along a linear path transverse to the tape travel direction. For operation with tapes without servo information on tape, a piezoelectric transducer detects the deflection of one of the support beams and provides an output which is utilized to provide damping of the natural resonance the spring/mass system that includes the first and second resilient support beams and the tape head and tape head frame supported thereby. Alternatively, the operation with tapes without servo tracks can be open-loop with the damping being provided by damping members disposed symmetrically on either side of the tape head frame.

Independent claims 1 and 11 both disclose a head actuator assembly that includes a coarse positioner base which is slidably mounted on two shafts. Applicant respectfully submits that Nayak does not disclose this aspect of the claimed embodiments. Instead, rather than being slidably mounted to any shaft, Nayak discloses that the head actuator assembly is merely guided by a single shaft 31 (see Figure 2). Specifically, a spring 26 biases a u-shaped member 29 against the anti-

rotation shaft to prevent rotation of the actuator relative to the lead screw 19. Further, it is readily apparent that the lead screw 19 and the actuator do not slide relative to each other. This can be seen via Nayak's figures 1 and 2:



-Nayak, figures 1 and2

Nayak's shafts are the anti-rotation shaft 31 (not labeled in figure 1 but it is the shaft mounted on stepper motor 21) and the lead screw 19. Movement of Nayak's tape head carriage 17 is summarized in the following entry:

> **The magnetic tape 11 is engaged against the multiple channel magnetic tape head 15 is moved along the tape movement axis across the face of the multiple channel magnetic tape head for write and read operations. The multiple channel magnetic tape head 15 is supported by the head carriage 17 which in turn is supported by a lead screw 19 whose longitudinal axis is transverse to the tape movement axis. The lead screw 19 is rotated by a stepper motor 21 via a pinion gear 25 that is fixed to the output shaft of the stepper motor and engaged with gear 23 that is fixed to the lead screw 19. Rotation of the lead screw 19 thus moves the tape head 15 transversely across the tape along the tape head movement axis.**

-Nayak, column 3, lines 24-36

As lead screw 19 includes a thread, Applicant respectfully submits that tape head carriage 17 is not slidably mounted on shaft/screw 19. Restated, tape head carriage 17 can not freely/slidably move along screw 19 due to the thread. Movement of tape head carriage 17 can not be affected unless screw 19 is rotated.

Claims 1 and 11 disclose a head actuator assembly that includes a coarse positioner base slidably mounted on two shafts. Since Nayak does not disclose a coarse

positioner base slidably mounted on two shafts, Applicant respectfully submits that Nayak does not disclose claims 1 and 11. Furthermore, one of the shafts in Nayak has a threaded surface. Given that at least one shaft is threaded in Nayak, one of ordinary skill in the art would not be motivated to modify Nayak to create the claimed combination as the threaded surface of the shaft would interfere with the sliding relation between the shaft and the coarse positioner.

As discussed above, as to claim 1, Nayak fails to disclose or suggest the invention that includes an assembly where first and second shafts slidably engage bushings of a coarse actuator. Rather, Nayak discloses an assembly where rotation of a threaded shaft imparts displacement of the actuator. Further, given that at least one shaft is threaded in Nayak, one of ordinary skill in the art would not be motivated to modify Nayak to create the claimed combination as the threaded surface of the shaft would interfere with the claimed sliding relation between the bushing and the shaft.

In view of the foregoing, Applicant respectfully requests withdrawal of the rejections of the claims.

ALLOWABLE SUBJECT MATTER

Applicant thanks the Examiner for noting the presence of allowable subject matter in claims 3-10 and 14. The rejection of claim 15 has been attended to via the preceding amendment. Therefore claims 15-20 are also allowable. Applicant has folded the subject matter of claim 3 into claim s and the subject matter of claim 13 into claim 14. Applicant therefore respectfully submits that claims 2-10 and 14-20 are allowable.

CONCLUSION

Applicant believes that all pending claims are allowable and a Notice of Allowance is respectfully requested.

If the Examiner believes that a conference would be of value in expediting the prosecution of this application, he is cordially invited to telephone the undersigned counsel at the number set out below.

Respectfully submitted,
LAW OFFICE OF MARK J. SPOLYAR

/Mark James Spolyar/
Mark James Spolyar
Reg. No. 42,164

Dated: September 21, 2006

Customer No. 30505
Law Office of Mark J. Spolyar
2200 Cesar Chavez Street, Suite #8
San Francisco, CA 94124
Telephone: (415) 826-7966